Title

Implementation of Common Core State Standards for Mathematics with African American and Hispanic American Students: Successful Common Practices

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Abstract

In an era of high-accountability and high-stakes, testing teachers are challenged to find ways to create learning environments focused on active student participation where learning is constructed through higher-order competencies. This study is prompted by the recent adoption of the Common Core State Standards for Mathematics and examines the common practices of five successful teacher models in relation to its implementation. Using a basic qualitative research design, this study implements a comparative analysis of multiple data sources to determine if common practices or meanings exist among teachers who are successful in executing CCSSM. Five teachers in grades six through eight participated in this study over a period of six months. Primary data sources included interviews and documents. Data were analyzed using a comparative analysis across cases and data sources. Findings indicated common practices existed among the participants during their implementation of CCSSM. Furthermore, the findings showed common patterns related to aspects of the classroom/school environment influencing the participants' implementation of CCSSM with African American and Hispanic American students.

Key words: Common Core · Mathematics · Equity · Curriculum Reform

Introduction

Despite American reform efforts to improve student achievement, research indicated differences in curriculum implementation were still present in schools serving large populations of African American and Hispanic American students (Darling-Hammond, 2000; Howard, 2003; Lewis, 2007; Olszewski-Kubilius & Clarenbach, 2014; Smith, 2004). According to Smith (2004), a significant challenge of curriculum reform is its ability to support efforts to close the achievement gap between European American and African American students. Smith contended one of the means of closing the racial/ethnic achievement gap is to ensure equal access to high-quality teachers, safe learning focused environments, and provision of high-quality curricular resources for all students.

In the current study, we sought to divulge a different view revealing improvements of mathematics pedagogy of minority students by exploring the common practices used by teachers who found success implementing CCSSM with African American and Hispanic American students. The challenge for education is to help foster an unbiased and inclusive society perceived as valid for all students (Cobb and Hodge, 2002). The broader concerns of society to impact mathematics education of all students framed this study: (1) curriculum reform, (2) equity, (3) and the classroom/school environment's influence on mathematics teaching and learning.

Implementing CCSSM in Minority Schools

Teachers in this study were recruited to participate from among seven middle schools where African American and Hispanic American students make up the majority population of the student body within the selected learning communities. The schools

selected for this study represent good choices for examining teacher success models in schools where standardized test results are consistently lower than both district and state results. Five African American teachers were selected and represented three of the seven schools with similar demographic composition. The findings in this study showed significant commonalities occurred not only among the participants' beliefs about teaching and learning as well as in their experiences as educators.

Participants in this study came into the teaching field from a variety of backgrounds. Only one teacher, Gary, knew he wanted to become a teacher early in his career. The other participants (Belinda, Karen, Norman and Toni) each chose or pursued different career paths prior to becoming teachers. Gary was the youngest participant with only 3 years of teaching experience. Toni entered the teaching profession from the airline industry and had 6 years of teaching experience. Karen came into education after being a professional assistance and, at the time of this study, she had 8 years of teaching experience. Norman was a realtor prior to becoming a teacher and had 15 years of teaching experience. Belinda had the most experience (20 years) and decided to become a teacher after pursuing a degree in computer science. The variety in background experiences helped to frame the participants' specific concerns about the expectations of CCSSM and the impact it had on their students' learning.

Curriculum Reform Efforts and Mathematics Achievement Literature

Researchers contended few practices result in wide scale changes in classroom practices with the exception of the development of standards-based curricula (Drake & Sherin, 2006; Jenkins & Agamba, 2013). Some prior studies showed the importance of teachers embracing strategies designed to impact learning for all students (Drake &

Sherin, 2000; Schoen, Cebulla, & Finn, 2003). The current study examined how paradigms within Common Core State Standards (CCSSM), such as mathematical tasks and students' engagement in the Standards for Mathematical Practice (SMP), are enacted in classrooms among teachers of minority students.

Various studies illustrated the challenges and successes teachers face as a result of their beliefs and orientations towards curriculum reform (Charalambos & Philippou, 2010; Drake & Sherin, 2006; Remillard & Bryans, 2004). The consistent findings among these researchers indicated classroom instruction is more favorable to student learning when teachers' views are more in line with the goals of the curriculum reform. Research supported the notion teachers exercise considerable discretion in their use, and implementation, of curriculum resource materials. While the challenges and expectations of CCSSM are lofty goals for many educators, it offers a unique opportunity to improve teaching and learning for all students.

Equity and Mathematics Achievement Literature

The high expectations of a standards-based curriculum, such as CCSSM, to significantly impact the achievement of all students creates classroom challenges for many teachers, particularly teachers of African American and Hispanic American students. Common Core State Standards for Mathematics is important in supporting efforts to close the achievement gap between European American, African American and Hispanic American students. Marrongelle, Sztajn, and Smith (2013) argued the implementation of the CCSSM will require strong teacher engagement and undeniably bring about challenges as well as changes. Scholars agreed on teachers embracing reform will use common means to encourage students' mathematical communication and

promote conjecturing, problem-solving and investigation while valuing students' thinking (Franco, Sztain, & Ramalho-Ortigao, 2007). Researchers suggested teachers employing successful practices with African American and Hispanic American students implement the principles of equitable teaching in classroom instruction (Gay, 2013; Hand, 2012; Lewis, 2007).

Many scholars argued closing the racial/ethnic achievement gap would undoubtedly require equitable principles of teaching and learning (Hand, 2012; Lubienski, 2002a; Smith, 2004). To that end, the current research sought to uncover practices employed by teachers finding success in improving the achievement of ethnically diverse students during this recent standards-based reform era of Common Core State Standards. Although the research offered several suggestions for how equitable teaching can support closing the racial/ethnic achievement gap, this study supports the need for a more comprehensive model describing this relationship in the current era of high-stakes accountability.

The School/Classroom Environment and Mathematics Achievement Literature

A good understanding of the influence of classroom/school environment on teaching and learning was important to the current study because it discloses various factors teachers face when implementing curriculum reform within schools. In the current study, the classroom/school environment is defined as the physical environment, policies, practices, as well as the relationships and the interactions between different participants around content, teaching, and learning (Opdenakker & Damme, 2007). For many public schools, curriculum reform goals and raising standards of content and performance have sparked fierce debates and increased the pressure of high-stakes

accountability, prescriptive curriculum, and strengthening accountability with less autonomy for teachers (Abrams, Pedulla, & Madaus, 2003; Harrison-Jones, 2007; Opdenakker & Damme, 2001; Opdenakker & Damme, 2007).

More schools are operating in environments of increased pressures of high-stakes accountability. High-stakes accountability describes a climate experienced by educators due to the implementation of NCLB legislation resulting in increased, intensified, and expanded pressure in response to federal, state, and local policies aimed at raising student achievement (Valli & Buese, 2007, p. 520). Various scholars have analyzed the pressures teachers face with a focus placed more on preparing students for high-stakes testing above curriculum expectations and the need for changes in school compositions and practices as a means of impacting ethnically diverse students' achievement (Abrams, Pedulla, & Madaus, 2003; Boonen, Speybroeck, Bilde, Lamote, Van Damme & Onghena, 2014; Harrison-Jones, 2007; Opdenakker & Damme, 2007; Valli & Buese, 2007). Harrison-Jones (2007) argued whether the high-stakes accountability implemented under NCLB actually added to the anticipated changes of better teaching and learning, engaged students more, or increased graduation rates. Many educators agreed with the proposals of NCLB legislation's efforts to improve schools; however, there was much caution of the negative consequences surrounding high-stakes accountability (Harrison-Jones, 2007).

Various scholars documenting the influences of high-stakes accountability environments on the teaching practice opposed the implementation of content standards (Abrams et al., 2003; Au, 2007; Diamond, 2007). Their research indicated teachers' views were generally positive about the state content standards (Abrams et al., 2003; Au,

2007; Diamond, 2007). Nevertheless, Abrams et al., (2003) found teachers "reported the state test has led them to teach in ways that contradict their own notions of sound educational practice" (p. 27). It was further suggested high-stakes accountability environments had a significant impact on the teachers' instructional practices. Teachers were more likely to focus instruction on the content assessed, rather than enrichment activities (Abrams et al., 2003; Au, 2007). This research found teachers in high-stakes testing environments felt pressured to improve student performance on state tests from superintendents, principals and parents.

In addition to the influence of high-stakes accountability on curriculum reform, researchers have investigated the influence of a school's composition and processes on students' mathematics achievement. Various studies found similar classroom/school environmental variables impacting students' learning and engagement in mathematics and to include organization, racial composition, prior mathematics achievement and school personnel (Boonen et al., 2014; Opdenakker & Damme, 2001). Opdenakker and Damme (2001) found significant relationships existed between school characteristics explaining differences in the mathematics achievement of some schools. Boonen et al., (2014) investigated the importance of the school's composition on the mathematics achievements of minority students using quantitative analysis. The study found a significantly positive association between students' prior mathematics achievement and school composition for high achievers, but not medium and low learners.

Method

Due to teachers' unique experiences, this study was implemented using qualitative research established in the basic interpretivist theory. The primary goal of this

study was to understand and describe the distinctive meanings of successful teacher models in the context of their school environments. The interpretive research approach allowed meaning to be constructed and interpreted throughout the process of collecting data and engaging with teachers in their environments (Merriam & Associates, 2002). According to Merriam (2009), meaning is not uncovered but constructed as individuals interact within this social world.

Site and Participant Selection

Teachers were recruited to participate in this study from among seven middle schools within two learning communities in an urban school district in the Southeastern part of the United States. The section of the participating school district chosen for this study reflected African American and Hispanic American students making up the majority population of the student body within the learning communities. The schools selected for this study represent good choices for examining teacher success models in schools where standardize test results are consistently lower than both the district and state results. A purposeful sampling procedure was used to identify individuals from within the chosen schools who sufficiently represent the intensity of successful teacher models, but were not an extreme case (Patton, 2002).

The following criteria were used and shared with school leaders and teachers to select participants: (1) two years teaching experience with CCSSM, (2) a reputation among school leaders and colleagues as being an individual who is successful implementing CCSSM, (3) a self-identified commitment to students' success, (4) standardized-tests results comparable to district and state results for African American and Hispanic American students, and (5) teach more than sixty percent of the students in

an on-level mathematics course. Selecting a sample size of five teachers as successful models provided an ample size to explore the nature of variation among participants (Patton, 2002).

The selection criteria allowed for a sample of five teachers with all having a common understanding of the CCSSM. At the time of this study, CCSSM was in its third year of implementation and teachers were teaching CCSSM since the onset of its implementation in their school district. These criteria provided individuals with a good understanding of the curriculum. Teachers were purposefully sought and identified through reputation, word of mouth, and referrals. Table 1 summarizes demographic and selection profiles of the five successful teacher models selected for this research. The recent state and district assessment scores summarize the middle school results for both African American and Hispanic American students.

Table 1

Successful Teacher Models Selection Profiles

Pseudonym	Gender	Years in Education	2014 Results Meets/ Exceed All	2014 State Results Meets/ Exceeds AA	2014 State Results Meets/ Exceeds H	2014 District Results Meets/ Exceeds AA	2014 District Results Meets/ Exceeds H
Belinda	F	20	91%	83%	88%	85%	91%
Gary	M	3	93%	83%	88%	85%	91%
Karen	F	8	89%	83%	88%	85%	91%
Norman	M	15	85%	83%	88%	85%	91%
Toni	F	6	87%	83%	88%	85%	91%

Note. AA = African America; H= Hispanic.

Procedure

Data was collected through a series of interviews and documents and was analyzed using a comparative cross case analysis. Utilizing the conceptual framework comprising curriculum reform, equity, and the classroom/school environment, interviews and documents were compared for similarities and differences throughout the data collection and analysis process. The step-by-step procedure of analyzing data included initial coding and category construction; sorting categories and data; and developing more theoretical themes (Merriam, 2009). Through concurrent data analysis and a review of the literature, final themes were derived from the research questions and are the findings of this study.

Interviews were conducted face-to-face using an interview protocol adapted from Seidman's (2006) three-structure interview guide. Document analysis occurred throughout the data collection and analysis process. Interview transcriptions and documents were compared throughout for similarities and differences while examining the conceptual framework of this study for evidence. The review of documents was to help corroborate with interview data to enhance the credibility of this study. Using multiple methods of collecting data can support checking what is stated in an interview with what is observed on site or read in documents to support a phenomenon of interest (Merriam, 2009).

Trustworthiness

In order to circumvent possible threats and test the validity of conclusions, triangulation, member checks, feedback, and rich descriptive data analysis were employed. The qualitative aspects of this study supported the use of rich descriptive data.

While examining data, explanations and counter explanations of evidence was examined. According to Merriam (2009), "highly descriptive" explanations of the findings and adequate evidence presented in the form of quotes from participant interviews, field notes and documents enhance the possibility of the results of a qualitative study transferring to another setting. Comparing the research findings with the existing literature was important to supporting the trustworthiness of this study.

Results

The final themes emerged from intensive analysis and review of audio recordings, interview transcripts, documents and personal reflections. By employing a step-by-step procedure of analyzing data from all sources, three primary themes emerged relating to participants' common practices: 1) views navigating CCSSM; 2) teacher/student relationships and effective learning; and, 3) organizational structures drive CCSSM.

Views Navigating CCSSM

Positive Orientations

One of the ways participants in this study navigated CCSSM was through their positive orientations towards the curriculum. This subtheme examined participants' dispositions towards CCSSM and its influence on students' thinking. Remillard and Bryans' (2004) found teacher orientation towards curriculum materials was influenced by their views of the curriculum and reflected in their sincerity to implement it with fidelity. Participants' views echoed Remillard and Bryans' (2004) claim that a teachers' orientation influenced curriculum implementation whether they agreed with the goals of the reform efforts or not.

Interview data indicated a participants' ability to navigate CCSSM was influenced by their positive dispositions towards the curriculum. For some participants, this was noted in their responses for what they valued most about CCSSM. Patterns revealed positive orientations towards curriculum implementation, primarily where it focused on supporting the development of students' thinking. This exemplifies Remillard and Bryans' (2004) findings that some teachers' positive orientation towards curriculum materials helped foster student thinking.

Artifacts selected by teachers to represent their navigation of CCSSM indicated knowledge about their dispositions towards curriculum reform. The implementation of tasks into mathematics instruction is important to support the development of mathematical thinking and self-regulated learning in students (Clark, Roche, Cheeseman, & Sullivan, 2014; Stein & Kaufman, 2010). All participants selected tasks requiring students to go beyond typical skills, such as procedures for adding integers, to support their development as mathematical thinkers.

Two examples of participant quotes emphasizing this theme are included to demonstrate teacher reflections of CCSSM on developing thinking and reasoning in their students and their own instructional practices. When asked how CCSSM influenced the instruction of his students, Gary revealed positive orientations towards CCSSM. His response reflected the impact CCSSM had on his students' thinking.

> Common Core challenges students to be assured of what they are doing. It not only allows students to learn the materials, but to apply it in different ways and think about the rationale for why these things make sense, or why this algorithm work and what's the basis behind this information. I had to push myself. So once

> I started pushing myself, then I begin to love getting my kids to think. It is challenging to get them to understand the meaning behind why we are doing what we are doing.

Gary selected a task allowing students to explore standards using manipulatives. He provided students with geometric solids and Play-dough as models to support their conceptual understanding. Students were asked to determine two-dimensional slices resulting from a given three-dimensional shape. The goal of this activity was for students to develop an understanding of the relationships between two-dimensional and three-dimensional figures.

Although Karen found CCSSM challenged her students' skill levels, she still found value in the applications it encouraged for students. She shared the following anecdote:

> With the implementation of Common Core, standards-based curriculum went from not just being skilled-based, but to application. When Common Core came along and shifted some of the concepts. Some kids were definitely lacking some of the real foundational things they needed to master standard. Common Core has forced me to connect some basic skills, some pre-requisite skills, and current skills together so that students can not only just know the skills, but how to apply them.

Karen's task selection allowed students to measure circular objects to construct the relationship between the quotient of the circumference and diameter of a circle by examining the connection in a table. Students were provided examples of circular items found in the classroom to support their conceptual understanding. The goal of Karen's

task was for students to understand the relationship between the circumference and diameter of a circle as *pi*.

Students' Success

The teachers in this study perceived their students as capable of performing high levels of competencies. Another way teachers in this study navigated CCSSM was through their ability to focus on students' success. This subtheme developed from examining participants' responses to multiple interview questions. In particular, the participants' focus on their students' success emerged as a pattern in response to their greatest satisfactions while teaching and what they valued most about CCSSM. As a result, three participants' responses focused on student growth and the teacher's ability to impact the students' future. Karen, Toni and Gary's responses complemented each other with all emphasizing their satisfaction in seeing student growth.

Gary noted, "I like seeing students have those 'aha' moments. I like seeing where they started from and knowing that the light is finally coming on for them." Gary's response may indicate he was influenced by a desire to see his students succeed. This is indicated in his response to what he valued most about CCSSM.

> What encourages me is making sure that I am delivering the best instruction possible to the kids. My goal is not to fail them. To not fail them, I stick to the standards. Not just to teach the standards, but to make sure they will be well equipped for the next grade. That way, progression and growth go from grade level to grade level.

Gary's desire to help students make connections across mathematical content is supported by McCaffrey, Hamilton, Stecher, Klein, Bugliari, and Robyn's (2001)

analysis that one significant shift of standards-based curriculum reform is emphasizing connections among ideas and applications rather than isolated concepts and procedures.

Toni shared notions of her students' success as reassurances of her implementation of CCSSM with fidelity. She stated:

> What encourages me is that I want my students to be successful. I want them to get whatever it is they need to be able to move on to the next level. What discourages me is that Common Core is more complex than what they are used to. So it's discouraging when I say explain to me your reasoning, show me how you got this answer. It's discouraging when they have difficulty doing that. But, I am still encouraged to teach them, because I know that's what they need to be successful later on.

Toni's view confirmed prior research indicating rigor in Common Core standards requires teachers to shift from merely helping students develop needed skills to supporting their ability to think critically and solve complex problems (Polly & Orrill, 2014; Rothman, 2012).

Teacher/Student Relationships and Effective Learning

This theme examined participants' use of equitable teaching practices to support student success and highlighted the importance of building positive relationships. This theme built on the previous theme connecting the teachers' views while capturing the commonalities among participants' equitable teaching principles. Equitable teaching examines a teacher's ability to make appropriate accommodations promoting access and attainment while understanding and attending to students' cultural needs (NCTM, 2000). According to Hand (2012), equitable mathematics teaching engaged a wide-range of

learners in rigorous mathematics by: 1) attaining success with non-dominant learners; 2) encouraging conceptual understanding, ownership and belonging; and, 3) limiting occurrences of opposition into mathematics instruction (p.237).

Connecting with Students

This sub-theme examined the various ways participants sought to develop relationships and build rapport with their students to influence student success. This concept of connecting with students aligns with Ladson-Billings (1997) findings suggesting teachers must extend beyond their knowledge of how to best teach diverse learners and build relationships connecting students to classroom communities. All participants seemed to look for ways to connect and engage a wide range of students in their instruction. When asked about the secrets to his success implementing CCSSM, Gary noted:

> Building relationships with my students. It's all about my students seeing that I believe in them. I try to let my students know I am interested in them both inside and outside of the classroom. I also try to build a culture in the classroom where that space becomes ours, mine and my students'.

Belinda recognized the challenge of connecting with students who struggle to understand mathematics conveyed through her classroom instruction. She expressed an important part of her work is to help students love math. She stated, "The challenge is being able to deliver it to students' who don't like it and especially to children who not only don't like math, but find it hard." Her ability to build positive relationships with students has replicated rewards for her as a teacher. She revealed this about her students, "When I am done, they say you helped me to like math a little more."

Rigor in the Classroom

This theme focused on the overlap of teachers' utilization of equitable teaching principles and their ability to build positive relationships with students. The principles of equitable teaching challenges teachers to build positive relationships while encouraging students to be engaged in rigorous learning. Data analysis from interviews and documents revealed teachers utilized strategies to engage a wide-range of learners in rigorous math, attained success with students traditionally less engaged, and encouraged students to develop conceptual understanding (Hand, 2012). Irrespective of the school or experience level, all participants in this study spoke of the challenges they faced due to the rigor of the standards and teaching ethnically diverse students.

When asked to describe a typical student in their classroom, most participants described students largely by low proficiency levels, low self-esteem gaps, and often being distracted academically. On the other hand, they all seemed to view their students as capable, worthy, and eager to succeed provided they had the right motivations. Participants shared similar stories about the challenges their students faced academically. Belinda noted, "A typical student is one who is afraid to ask questions and let me know that they don't understand." She continued describing how she goes through several days of lessons and later discovers "Jane says 'I didn't get it when you taught it last week'." Like Belinda, Karen described her students' challenges through this anecdote: "'You want us to write the problem?' 'Yes, I do.' 'We have to show our work too?' 'Yes, you do.' 'Awe that's doing too much.'"

Despite the challenges their students faced meeting the expectations of CCSSM, participants in this study gave attention to equitable teaching principles. All the teachers

found ways to create classroom-learning environments emphasizing active engagement in rigorous mathematics. Two examples included Belinda looking for opportunities to consistently make lessons interesting for her students. She explained:

> If your lesson is fun and ... they are interested in, that's what you have to do to consistently engage students. If they have no connection to the lesson, then it's not going to reach them. If your lesson is fun and they can connect to it, then you will have them engaged.

Gary described his typical student and shared ways in which he met the challenges he faced while teaching.

> The typical student in my class desires to learn, but sometimes they are not sure about their math capabilities. I feel like it's my job to build that student up to where they have the fortitude, mental capacity as well as the confidence in order to engage in the mathematics. Once they found success, it only takes one time for the most part. The typical students in my class want to succeed.

Organizational Structures drive CCSSM

This theme suggested a school's organizational structure supports or discourages teachers' implementation of CCSSM. The theme captured participants' interpretations of the classroom/school pressures influencing implementation of the curriculum. Responses across all cases revealed participants felt the pressures of high stakes testing influenced their implementation of CCSSM. Teachers believed they were pressured to implement curriculum in a timely manner and to make sure students were prepared for the next level. Acknowledging evaluations could be affected by their students' achievement measured on statewide assessments added undo pressure as well.

The participants' views concerning these pressures were shared in their response to the aspects of the classroom/school environment influencing implementation of CCSSM with students. Belinda, Karen and Norman identified the influences of high-stakes testing in a direct way and gave concrete examples of its influence on their implementation of CCSSM. Gary and Toni gave indirect responses. Literature on the classroom/school environments influenced by high-stakes accountability confirms participants' responses indicating increased pressures caused teachers to focus more on preparing students for high-stakes testing above curriculum expectations (Abrams, Pedulla, & Madaus, 2003; Harrison-Jones, 2007; Valli & Buese, 2007).

When asked to identify aspects of the classroom/school environment influencing implementation of CCSSM, Belinda expressed direct concerns about high-stakes testing. She succinctly expressed frustration with school administrators as she struggled to meet expectations.

> Because I have participated in various trainings with Common Core implementation, I know what is expected in the classroom. What discourages me is that sometimes I am not able to implement the standards the way they [administration] expect. If my administrators don't agree that what I am doing is right, I have one thing in my mind of what I should be doing and they may say that I am not doing it right. That becomes a challenge for me.

On the other hand, Gary and Toni discussed how high-stakes testing had an indirect influence upon them. Their concern about the pressures teachers faced were revealed unintentionally in their expressions relating to their students' success. Gary felt he should be given more autonomy over what he teaches and how he teaches. He

complained about the need for the state to control the implementation of CCSSM in an effort to standardize how students are taught and tested. He lamented:

> I know the goal is to put everyone on the same playing field across all states. I know some states had problems with their proficiencies in regards to mathematics educational goals. I understand that and I think that although these standards are great, we should have some leeway to make adaptions for the students we serve.

Toni echoed similar frustrations with the tightly centralized control over the implementation of CCSSM. She shared the following concern:

> Sometimes because of time, we don't have the time to spend on different standards and be able to go into teaching them the way they are written to be taught. I feel like the standards are nice and they are very rich. However, I don't think the time we are given to actually teach the standards is sufficient for the amount of content that is expected.

Overall, participants' felt like they had no control over their flexibility in implementing the curriculum and their responses indicated school/environmental concerns impacted upon their implementation of CCSSM.

Discussions

The five African American teachers in this study seemed to understand the notions expressed in Battey's (2013) research suggesting teachers understood the significance of racial aspects of the classroom as well as the mathematics knowledge and instructional practices needed to teach African American and Hispanic American students. Participants had similar views navigating CCSSM indicating the focus on student academic success influenced their implementation of the curriculum. Secondly,

participants shared views focusing on the significance of teacher/student relationships in employing effective teaching practices. Lastly, participants expressed the organizational structures of the school mainly drove their implementation of CCSSM.

Theme 1: Positive Orientations

Participants all recognized the influence CCSSM had on supporting the development of mathematical thinking in their students and changes in their instruction. One approach of understanding what occurs during classroom implementation, according to Remillard (2005), is how teachers make use of, and are influenced by, the curriculum. For example, Belinda made adaptions in her primary practice of implementing direct instruction to incorporate a variety of strategies to support her students' learning. Belinda describes the changes as different means of learning in her classroom. She indicated, "I am learning from students, they are learning on their own, they are learning in small groups and with technology."

In line with Drake and Sherin's view, Gary found CCSSM pushed him out of his comfort zone as a teacher. He stated, "It has made me alter some of my teaching practices." Although Gary understood the challenges of curriculum implementation, he continued to focus on the importance of his students' thinking. Making adaptions for Gary demanded finding ways to improve his classroom instructional practices to influence his students' thinking. This was noted in his reflections, "How am I going to teach this? How am I going to convey this to the kids?"

Adjustments cited by participants provided a deeper understanding of their experiences as learners and teachers of mathematics as well as giving greater insight to their implementation of the curriculum (Drake & Sherin, 2006). In addition to

participants 'positive orientations' towards the curriculum, as reflected in changes to their practice and the development of thinking in their students, teacher selection of artifacts indicated positive dispositions towards the implementation of CCSSM. Participants selected tasks increasing a students' overall engagement in mathematics beyond just applying algorithms or developing skills.

Toni selected a task allowing her students to demonstrate their ability to make real-world connections across mathematical concepts, i.e., using systems of linear equations. Exposing students to worthwhile mathematical tasks was strongly recommended by the research framing this study (Clark et al., 2014; NCTM, 2000; Stein et al., 2009; Stein & Kaufman, 2010; Van de Walle, 2007). Teacher selection of artifacts seemed to confirm their orientations towards a rich curriculum focused more on problem-solving and task, rather than on skills and algorithms. The participants attention and concern for their students' success directed their classroom instructional practices while implementing CCSSM.

Theme 2: Teacher/Student Relationships and Effective Learning

The second theme identified the significance participants placed on teacher/student relationships and using equitable teaching practices to support student success. The teachers in this study utilized the knowledge of their students' cultural perspectives to cultivate positive relationships with their students. This theme is defined by the teachers' ability to employ equitable mathematics teaching to engage a wide-range of learners in rigorous mathematics and attaining success with non-dominant learners as well as encouraging competency, ownership, and belonging in the classroom. Commonly

cited amongst the teachers was evidence of practicing equitable teaching by finding ways to connect with students and engage them in rigorous mathematics instruction.

The teacher/student relationships were utilized to make connections to the students. Participants in this study developed their ability to understand the cultural relevance of the students they were teaching by making connections inside and outside of the classroom. This was illustrated in examples of attending sports events, having pizza parties, and providing time for after school tutorials. These means of connections were then transferred to the classroom to promote effective learning and teaching.

Connecting with Students

The five participants in this study saw the benefits of connecting with their students as a means for engaging students in rigorous mathematics experiences. Borrowing from Ladson-Billings (1997), connecting with students encouraged teachers to build classroom communities not only extending beyond the best ways to teach diverse learners, but allowing teachers to build and maintain strong positive relationships with students. Building relationships was a key concept in this study because participants used it to support their curriculum implementation. Participants found ways to build positive relationships with their students using a variety of techniques.

Methods used by the participants to build relationships with their students was their way of creating and communicating a culture of what was important in their classroom. Participants shared common beliefs aligning with Lewis's (2007) observations of the importance of building classroom cultures supporting the mathematics achievement of minority students. Two teachers, Gary and Karen, made efforts to connect with students inside and outside of the classroom. Gary developed

relationships with his students beyond the classroom by spending time attending students' extracurricular events. He recognized the possibilities to building his classroom culture. He assessed his classroom as a collective environment. He stated, "I also try to build a culture in the classroom where that space becomes ours, mine and my students." Karen focused on academic achievement and made connections to students in her classroom and provided what she referred to as "extrinsic rewards" outside of the school day. She explained, "… students …get invited to a pizza party."

Battey (2013) maintained teachers use positive relationships to support reform practices challenging students to delve deeper into the mathematics. Belinda exemplified this practice through the use of classroom instruction to connect with students struggling to understand the mathematics she tried to convey. For Belinda, building positive relationships with students seemed to focus on helping students develop an appreciation for mathematics. She indicated, "The challenge is being able to deliver it to students' who don't like it and especially to children who not only don't like it, but find it hard." At times teachers may often confuse lack of motivation with a student's inability to perform tasks. Although Belinda recognized the challenges of instructing diverse students, she found it difficult to find balance between employing equitable teaching principles and academic excellence.

Rigor in the Classroom

When examining the success of African American students in the area of mathematics, researchers cited characteristics of a teacher's ability to support students with a rigorous curriculum (Gutierrez, 2000). Engaging students in rigorous mathematics can be seen in Stein and Kaufman's (2010) definition of cognitive demanding instruction

where the teacher "attends to students' thinking and uses students' responses to move the class toward the mathematical goals" (p. 671). Equally as important to understanding this sub-theme was the research identifying shifts of CCSSM to prepare students with the skills needed to think critically and solve complex problems (Polly & Orrill, 2014; Rothman, 2012).

The research underpinning this study cautioned teachers with high proportions of African American and Hispanic American students of the dangers focusing on low level skills by not engaging them in problem solving and reasoning (Rousseau & Powell, 2005; Stein et al., 2009). Participants in this study engaged students in rigorous mathematical experiences even though the characteristics they described of their students presented challenges to the implementation of CCSSM. At times participants recalled characteristics of their students fit the stereotypes of low performing students. Gary recollected, "some students lacked the proficiencies and some basic skills needed to master the expectations of Common Core." Norman described a typical student as one with "a little lower self-esteem when it comes to education." Toni shared, "A typical student in my class would be below level." Many teachers struggle to achieve rigor and, although we see evidence of this challenge in the current study, all the teachers found ways to create classroom-learning environments emphasizing active engagement in rigorous mathematics through different means.

All participants' shared views and strategies used to counter the challenges students' demographics had on curriculum implementation by utilizing principles of equitable teaching throughout the interviews conducted. Belinda engaged students in rigorous mathematics by making instruction fun, utilizing cooperative learning strategies

to promote discourse, and by pushing her students to persevere. Gary became a representative of his students' success. He helped students build their "mental capacity" by allowing them opportunities to experience success. Karen utilized strategies to cognitively engage her students by communicating the big learning goals of the standards. Norman found ways to engage more learners by utilizing technology tools, games and projects to support students' learning styles and interest. Toni engaged students in rigorous mathematics by providing tasks with high-cognitive demands and by proposing questions to check for students' understanding. Schoenfeld's (2002) findings suggested strong evidence of implementation of standards-based reform increased the percent of African American students performing well on assessments involving problem solving concepts.

Theme 3: Organizational Structure Drive CCSSM

Participants in this study indicated influences of the organizational structure of the school defined the relationships between school composition (student, teacher population and school leadership), school context (location), and school practices on teaching and learning (Opdenakker & Damme, 2007). The participants' organizational structures had similar a student demographic population comprised of greater than 90% African American and Hispanic American students and the schools were closely located within the school district. However, the three schools were different in terms of leadership, teaching, and learning practices.

The evidence provided by this study indicated that regardless of the school, participants cited concerns of increased pressures through high-stakes accountability. This may be due to the organizational structure, student composition on school practice,

and school outcomes (Opdenakker & Damme, 2007). In order to meet the expectations of NCLB, additional pressures are placed upon teachers by current teacher evaluation systems promoting student-centered academic environments for teaching and learning to occur at high levels. In response, school administrators often seek to control classroom instruction and inhibit teacher creativity and the enjoyment of teaching and learning.

Belinda and Karen showed concern for their implementation of CCSSM and its impact on their teacher evaluation scores. Karen described her feelings in this manner, "What encourages me are my evaluations, I think what they [administrators] expect with Common Core is a little more challenging and difficult for kids." Belinda shared her frustration with the school administration's over-reach into instructional matters:

> If my administrators don't agree that what I am doing is right, I have one thing in my mind of what I should be doing and they may say that I am not doing it right. That becomes a challenge for me. It becomes a discouragement at times.

The pressures and feelings of negative consequences expressed by Karen and Belinda exemplify the findings of Harrison-Jones' (2007) reflecting caution pertaining to the negative consequence teachers feel surrounding high-stakes accountability.

While Norman expressed direct concerns, he was anxious future accountability measures would focus more on teacher data. He concluded, "As a state, we are looking at testing as an instrument to measure whether the teachers and students are doing well." Norman's concerns were reflected in key elements of CCSSM as indicated by Frey, Garfunkel, Briars, Isaac, Pollack, Robinson, Scheaffer, Schoenfeld, Seeley, Teague and Usiskin's (2014) research. Frey et al., suggested the importance of states and policy makers addressing current inadequate assessment tools while implementing CCSSM.

This research called for a median between high-stakes assessments and the extreme accountability measures placed on low-performing schools.

Organizational structures of schools seem to significantly influence participants' implementation of CCSSM. Nevertheless, the teachers in this study seemed more encouraged to implement CCSSM standards to help students succeed rather than focus on the pressures of high-stakes testing (Abrams et al., 2003). Interestingly, the common practices exhibited by participants of having positive orientations towards CCSSM, their abilities to build positive teacher/student relationships to facilitate student learning, and recognizing the constraints of organizational structures as driving influences of CCSSM, likely supported their ability to overcome all the red tape and still emerge as great teachers in their school.

Limitations and Future Direction

This study presented one slice of the implementation of CCSSM by successful teacher models. This study did not provide formal interviews with other stakeholders such as administrators and students to triangulate what the teachers said about themselves with what other stakeholders say about the implementation practices. Future studies along this line should look at perspectives of teacher implementation by other individuals and multiple perspectives on the same phenomenon. Such studies may need to select teachers from the same location with comparable experiences.

Although this study investigated the practices of teachers who find success implementing CCSSM and found common themes do exist among these teachers, as suggested by the research, future studies are needed to examine teacher practice during classroom instruction with students. Further research might include a longer, more

focused study utilizing interviews and observations of teachers in a wider variety of settings to support the creation of a more descriptive analysis of the common practices of these successful teacher models. Future studies may include the perspective brought about through student voices related to the classroom practices of their teachers. One means of understanding the practices of classroom teachers is to observe the interactions of the students and teachers while implementing curriculum resources.

Even with the current goals of CCSSM, curriculum inequalities are still present in schools with large populations of African American and Hispanic American students (Darling-Hammond, 2000; Lewis, 2007; Smith, 2004). Teachers who predominately serve these minority students are challenged to create classroom-learning environments emphasizing the student's active participation in meaningful mathematics (Darling-Hammond, 2000). School organizational structures should focus more on teacher support and less on the pressures of evaluation systems and test scores subsequently limiting teacher creativity. The concerns presented in this research raise questions of what mathematics teachers need in order to teach African American and Hispanic American students. Teachers in this study recognized the challenges they faced teaching minority students. They navigated CCSSM by making their students' achievement central to their implementation of curriculum reform and by recognizing positive dispositions towards the curricula resources impacted their students' mathematical thinking. Results of this research offer hope of narrowing the achievement gap through continued conversations centered on successful practices, quality curriculum, and good teaching strategies for ethnically diverse students.

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